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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/803,343

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Yuhong Zheng

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EXAMINER

KISWANTO, NICHOLAS

ART UNIT

PAPER NUMBER

3664

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/803,343	<b>Applicant(s)</b> ZHENG ET AL.	
	<b>Examiner</b> NICHOLAS KISWANTO	<b>Art Unit</b> 3664	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 10 December 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1 – 13, 15 – 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stumpe, et al. (5,669,678), henceforth referred to as “Stumpe/678”, in view of Schubert (6,030,055), henceforth referred to as “Schubert/055”.

As to claim 1, Stumpe/678 shows a non-iterative boundary value correction method (col 5, line 46 – 48) comprising the steps of deriving (col 4, line 23 – 24) a non-iterative (col 5, line 56 – 59) equation (col 6, line 56) that gives a calculated correction to a boundary value component (col 5, line 46 – 48) in a pressure control system (col 2, line 50 – 67), and applying a correction in the amount of the calculated error to the boundary value component of the pressure control system (col 5, line 39 – 43). Stumpe/678 further updates a value representing the voltage necessary to take a valve of the pressure control system from a de-energized state to a just closed position (col 6, line 37 - 57; col 7, line 8 - 10).

However, Stumpe/678 does not show where the boundary value error and updating of voltage value are based on an error between commanded pressure and observed pressure. Stumpe/678 further does not show where the method observes an

error between the commanded pressure and the observed pressure that is attributable to boundary value error, and then calculates a value of the error between the commanded pressure and the observed pressure.

Schubert/055 shows the commonly well-known method in the art where the boundary value error is based on an error between commanded pressure and observed pressure (col 4, line 12 – 16). Schubert/055 further shows the also commonly well-known method in the art of observing an error between the commanded pressure and the observed pressure (col 4, line 5 – 9) that is attributable to boundary value error (col 1, line 25 – 41), and then calculating a value of the error between the commanded pressure and the observed pressure (col 4, line 12 – 14).

It would have been obvious to one of ordinary skill in the art to modify the invention of Stumpe/678 by using the commonly well-known method in the art where the boundary value error and updating of voltage value are based on an error between commanded pressure and observed pressure. Further, modifying the invention by including the also commonly well-known method in the art of observing an error between the commanded pressure and the observed pressure that is attributable to boundary value error and then calculating a value of the error between the commanded pressure and the observed pressure as demonstrated by Schubert/055.

As to claim 2, Stumpe/678 and Schubert/055 disclose all elements per claimed invention as explained in paragraph regarding claim 1 above.

However, Stumpe/678 does not show that the boundary value component is calculated based on a single determination of the error between the commanded pressure and the observed pressure (055, 5, 28 – 49).

Schubert/055 shows a boundary value correction method that uses the commonly well-known method in the art of using a boundary value component that is calculated based on a single determination of the error between the commanded pressure and the observed pressure (col 5, line 28 – 49).

It would have been obvious to one of ordinary skill in the art to modify the invention of Stumpe/678 by using the commonly well-known method in the art of using a boundary value component that is calculated based on a single determination of the error between the commanded pressure and the observed pressure as demonstrated by Schubert/055.

As to claim 3, Stumpe/678 further shows the boundary value correction method implemented each time the pressure control system using the boundary value correction method is operated (col 7, line 52 – 55).

As to claim 4, Stumpe/678 further shows the error between the commanded pressure and the observed pressure determined for an entire operating range of pressures (col 6, line 32 – 35) of the pressure control system.

As to claim 5, Stumpe/678 further shows the boundary value errors for the range

of pressures determined by at least one of a pressure upward sweep (col 4, line 30 – 57) and a pressure downward sweep through the range of pressures (col 4, line 58).

As to claim 6, Stumpe/678 further shows the boundary value errors for the range of pressures determined by both of a pressure upward sweep (col 4, line 30 – 57) and a pressure downward sweep through the range of pressures (col 4, line 58).

As to claim 7, Stumpe/678 further shows the pressure downward sweep has different rates of pressure (col 4, line 30 – 31) decrease at different regions in the range of pressures (col 4, line 31 – 38).

As to claim 8, Stumpe/678 shows a boundary value correction method comprising the steps of determining boundary values in a first range of pressure differentials (col 5, line 13 – 24) for a valve and estimating a boundary value for a second range of pressure differentials (col 5, line 24 – 28) across the valve. Stumpe/678 further updates a value representing the voltage necessary to take a valve of the pressure control system from a de-energized state to a just closed position (col 6, line 37 - 57; col 7, line 8 - 10).

Stumpe/678 does not show the boundary value correction method applying a model to the determined boundary values.

Schubert/055 shows a boundary value correction method applying a model to the determined boundary values (col 4, line 30 – 34). Schubert/055 teaches that applying a model to the determined boundary values helps describe the relationship between the boundary value and the actual pressure in a valve (col 4, line 31 – 33).

It would have been obvious to one of ordinary skill in the art to modify the invention of Stumpe/678 by applying a model to the determined boundary values in order to help describe the relationship between the boundary value and the actual pressure in a valve.

As to claim 9, Stumpe/678 and Schubert/055 show all elements per claimed invention as explained in paragraph regarding claim 8 above.

However it is silent as to the specifics of the first range of pressure differentials are from about 0 bar to about 50 bar.

Nevertheless, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to have provide to Stumpe/678 and Schubert/055 with such first range of pressure differentials from about 0 bar to about 50 bar, since it has been held that where general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

As to claim 10, Stumpe/678 and Schubert/055 show all elements per claimed invention as explained in paragraph regarding claim 9 above.

However it is silent as to the specifics of the second range of pressure differentials are from about 50 bar to about 120 bar.

Nevertheless, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to have provide to Stumpe/678 and Schubert/055 with such second range of pressure differentials from about 50 bar to about 120 bar, since it has been held that where general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

As to claim 11, Stumpe/678 and Schubert/055 show all elements per claimed invnetion as explained in paragraph regarding claim 8 above.

However it is silent as to the specifics of the first range of pressure differentials are from about 120 bar to about 180 bar.

Nevertheless, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to have provide to Stumpe/678 and Schubert/055 with such first range of pressure differentials from about 120 bar to about 180 bar, since it has been held that where general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

As to claim 12, Stumpe/678 and Schubert/055 show all elements per claimed invnetion as explained in paragraph regarding claim 11 above.



However it is silent as to the specifics of the first range of pressure differentials are from about 50 bar to about 120 bar.

Nevertheless, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to have provide to Stumpe/678 and Schubert/055 with such first range of pressure differentials from about 50 bar to about 120 bar, since it has been held that where general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

As to claim 13, Stumpe/678 and Schubert/055 disclose all elements per claimed invention as explained in paragraph regarding claim 12 above.

However, Stumpe/678 does not show that the model is an estimation model using at least one valve constant and a pressure value at which the boundary value is estimated.

Schubert/055 shows a boundary value correction method where the model is an estimation model using at least one valve constant (col 4, line 32 – 33) and a pressure value at which the boundary value is estimated (col 4, line 34). Schubert/055 teaches that applying a model that is an estimation model using at least one valve constant and a pressure value at which the boundary value is estimated helps describe the relationship between the boundary value and the actual pressure in a valve (col 4, line 31 – 33).

It would have been obvious to one of ordinary skill in the art to modify the invention of Stumpe/678 and Schubert/055 by adding a model that is an estimation model using at least one valve constant and a pressure value at which the boundary value is estimated in order to help describe the relationship between the boundary value and the actual pressure in a valve.

As to claim 15, Stumpe/678 shows an iterative boundary value correction method (col 1, line 66 – col 2, line 3) comprising the steps of deriving (col 4, line 23 – 24) an iterative (col 1, line 67) equation (col 6, line 56) that gives a calculated correction to a boundary value component (col 5, line 46 – 48) in a pressure control system (col 2, line 50 – 67), and applying a correction in the amount of the calculated error to the boundary value component of the pressure control system (col 5, line 39 – 43). Stumpe/678 further updates a value representing the voltage necessary to take a valve of the pressure control system from a de-energized state to a just closed position (col 6, line 37 - 57; col 7, line 8 - 10).

However, Stumpe/678 does not show where the boundary value error and updating of voltage value are based on an error between commanded pressure and observed pressure. Stumpe/678 further does not show where the method observes an error between the commanded pressure and the observed pressure that is attributable to boundary value error, and then calculates a value of the error between the commanded pressure and the observed pressure.

Schubert/055 shows the commonly well-known method in the art where the boundary value error is based on an error between commanded pressure and observed pressure (col 4, line 12 – 16). Schubert/055 further shows the also commonly well-known method in the art of observing an error between the commanded pressure and the observed pressure (col 4, line 5 – 9) that is attributable to boundary value error (col 1, line 25 – 41), and then calculating a value of the error between the commanded pressure and the observed pressure (col 4, line 12 – 14).

It would have been obvious to one of ordinary skill in the art to modify the invention of Stumpe/678 by using the commonly well-known method in the art where the boundary value error and updating of voltage value are based on an error between commanded pressure and observed pressure. Further, modifying the invention by including the also commonly well-known method in the art of observing an error between the commanded pressure and the observed pressure that is attributable to boundary value error and then calculating a value of the error between the commanded pressure and the observed pressure as demonstrated by Schubert/055.

As to claim 16, Stumpe/678 and Schubert/055 disclose all elements per claimed invention as explained in paragraph regarding claim 1 above.

However, Stumpe/678 does not show that the boundary value component is calculated based on a single determination of the error between the commanded pressure and the observed pressure (055, 5, 28 – 49).

Schubert/055 shows a boundary value correction method that uses the commonly well-known method in the art of using a boundary value component that is calculated based on a single determination of the error between the commanded pressure and the observed pressure (col 5, line 28 – 49).

It would have been obvious to one of ordinary skill in the art to modify the invention of Stumpe/678 by using the commonly well-known method in the art of using a boundary value component that is calculated based on a single determination of the error between the commanded pressure and the observed pressure as demonstrated by Schubert/055.

As to claim 17, Stumpe/678 further shows the boundary value correction method implemented each time the pressure control system using the boundary value correction method is operated (col 7, line 52 – 55).

As to claim 18, Stumpe/678 further shows the error between the commanded pressure and the observed pressure determined for an entire operating range of pressures (col 6, line 32 – 35) of the pressure control system.

As to claim 19, Stumpe/678 further shows the boundary value errors for the range of pressures determined by at least one of a pressure upward sweep (col 4, line 30 – 57) and a pressure downward sweep through the range of pressures (col 4, line 58).

As to claim 20, Stumpe/678 further shows the boundary value errors for the range of pressures determined by both of a pressure upward sweep (col 4, line 30 – 57) and a pressure downward sweep through the range of pressures (col 4, line 58).

As to claim 21, Stumpe/678 further shows the pressure downward sweep has different rates of pressure (col 4, line 30 – 31) decrease at different regions in the range of pressures (col 4, line 31 – 38).

3. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stumpe/678 in view of Schubert/055, further in view of Campau et al. (5,941,608), henceforth referred to as “Campau/608”.

As to claim 14, Stumpe/678 and Schubert/055 disclose all elements per claimed invention as explained in paragraph regarding claim 13 above.

However, Stumpe/678 and Schubert/055 do not show that the estimation model is based on at least one of a linear function and an exponential function.

Campau/608 shows a commonly well-known method in the art of using a boundary value correction method where the estimation model is based on at least one of a linear function (col 6, line 35, (3)) and an exponential function (col 6, line 25, (2)).

It would have been obvious to one of ordinary skill in the art to modify the invention of Stumpe/678 and Schubert/055 by adding the commonly well-known method in the art of using a boundary value correction method where the estimation model is

based on at least one of a linear function and an exponential function as demonstrated by Campau/608.

### ***Response to Arguments***

4. Applicant's arguments with respect to claims 1 – 21 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Luckevich et al. (6,226,586) shows an estimation model that is based on a linear function and an exponential function.

Heckmann et al. (6,086,167) shows a boundary value correction method that compares the pressure applied by the driver and the actual pressure in the brake actuators.

Pueschel et al. (5,727,854) shows a brake system that accounts for different rates of change in different pressure regions.

Stumpe et al. (5,806,938) shows a method for determining a boundary value of a brake system by comparing desired pressure against actual pressure.

Fijioka et al. (5,545,929) shows a brake system that derives an iterative equation.

Pueschel et al. (6,715,846) shows a brake system that applies a model to boundary values.

Bremeier et al. (2004/0162662) shows a brake system that determines boundary values by comparing the desired pressure and actual pressure.

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NICHOLAS KISWANTO whose telephone number is

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(571)270-3269. The examiner can normally be reached on Monday - Friday, 9AM - 6PM, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Khoi Tran, can be reached on (571) 272-6919. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Nicholas Kiswanto

March 20, 2008

/Khoi H Tran/

Supervisory Patent Examiner, Art Unit 3664